

REMARKS

Claims 1-5 and 8-11 were pending in the above-identified application. Claims 1-5, 8, and 11 were rejected. With this Amendment, claims 1, 2, 4, 5, and 8 were amended and new claims 12-19 were added. Applicants maintain that no new matter has been added. Accordingly, claims 1-5, 8, and 11 are at issue in the above-identified application.

Applicants would like to thank Examiner Booth for his courteous and helpful discussion held with Applicants' representative on March 31, 2004. Applicants representative and Examiner discussed a proposed amendment presented that would render the claims allowable over the references of record. Specifically, specifying first and second cleaners to remove the impurity product and the native oxide which defines over the prior art of record.

35 U.S.C. § 112 Indefiniteness Rejection of Claims

Claims 1-5, 8, and 11 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner has stated that the specification as originally filed failed to provide support for removing an impurity product using a non-etching cleaner. The Examiner then states that both of the solutions shown in Fig. 8 contain etching material such as diluted hydrofluoric acid (DHF). Applicants respectfully disagree with Examiner's observations. Figure 8 illustrates cleaning that was performed using a cleaning method as described in the specification at Page 7, line 17 to Page 8, line 2. This cleaning method discusses removing an impurity product 19 by cleaning using a cleaning solution which comprises hot water. It then discusses removing a native oxide film formed on the surface of the bottom electrode 17a by cleaning through soaking the bottom electrode 17a in a diluted hydrofluoric acid solution. Thus, while Figure 8 may label case (2) as hot water plus DHF, this

label does not mean that the impurity product is removed using both hot water and diluted hydrofluoric acid. In fact, as taught in the specification, the impurity product is removed by cleaning using a cleaning solution which may comprise hot water while a native oxide is removed using a second cleaning solution which may comprise diluted hydrofluoric acid. Additionally, Applicants have removed the term non-etching from claim 1, rendering the Examiner's argument mute. Accordingly, Applicants believe that claims 1-5, 8, and 11 do comply with the written description requirement as stated under 35 U.S.C. § 112, first paragraph.

35 U.S.C. § 103 Obviousness Rejection of Claims

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of *Jenq et al.* (U.S. Patent No. 6,153,465). Claim 8 was rejected under 35 U.S.C. § 103(a), as being unpatentable over the admitted prior art in view of *Jenq et al.* as applied to claims 1-5 above, and further in view of *Ghandhi* (VLSI Fabrication Principles, Silicon and Gallium Arsenide, Second Edition, by Sorab K. Ghandhi). Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of *Jenq et al.* as applied to claims 1-5 above, and further in view of *Dennison et al.* (U.S. Patent No. 5,494,841). Amended claim 1, from which claims 2-5, 8 and 11 depend, recites a method of manufacturing a semiconductor device comprising removing an impurity product from a semiconductor film using a first cleaner selected from the group consisting of: 1) hot water, 2) a mixed solution of water, hydrochloric acid and hydrogen peroxide, and 3) a mixed solution of sulfuric acid and hydrogen peroxide, and removing native oxide on the semiconductor film using a second cleaner. None of the above-cited references, either alone or in combination, teach or even suggest removing an impurity product from a semiconductor film using a first cleaner and

removing native oxide on the semiconductor film using a second cleaner. For example, the *Jenq et al.* reference teaches dipping a hemispherical grain polysilicon (HSG) layer 26 into an etchant such as RCA-HF to remove a native oxide layer on the surface of the HSG layer 26, wherein the RCA etchant includes NH_4OH , hot deionized water (HDIW) and H_2O_2 . While *Jenq et al.* may teach removing a native oxide layer using a cleaner such as RCA-HF, *Jenq et al.* does not teach or even suggest removing an impurity product using a first cleaner and removing native oxide using a second cleaner. Accordingly, Applicants submit that the claimed invention is not anticipated by nor obvious over the applied references, either alone or in combination. Withdrawal of these grounds of rejection is respectfully requested.

In view of the foregoing, Applicant submits that the application is in condition for allowance. Notice to that effect is requested.

Respectfully submitted,

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